



For A Cleaner World

“Biological Double-efficiency Process (BDP) is an innovative, stable and highly efficient biological wastewater treatment technology.”



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Cover Photo: BDP System at an Acrylonitrile Butadiene Styrene (ABS)
Wastewater Treatment Plant, CNPC Petroleum Group, Jilin, China

Revolution makes who we are

BDP EnviroTech LLC specializes in developing and applying the most advanced and patented mainstream biological wastewater treatment technology. Biological Double-Efficiency Process (BDP) technology has been carried out in the pilot test study in Europe and Asia since 2005. BDP established our global headquarter in Maryland, USA, in 2013. At present, BDP has installed over 40 full-scale applications in water environmental facilities and is one of the most robust biological treatment technologies in the wastewater treatment industry.



A Global Company

We are a global company with our headquarters in the USA, and subsidiaries in France and China.



State-of-the-art Technology

Published by U.S. Environmental Protection Agency and awarded by California Energy Commission.



Full Scale Applications

More than 40 full scale applications worldwide for both municipal and industrial clients.



A Total Solution

We deliver energy-efficient and cost-effective total solutions to resolve environmental issues.

BDP demonstrated a significant readiness for the worldwide market. BDP's unique and proprietary integrated system is being acknowledged by Fortune 500 companies (e.g. Vinci Group, British Petroleum and Sinopec) as ahead of its competitors. More than forty (40) wastewater treatment plants adopted BDP process worldwide, covering industrial wastewater and municipal sewage; either for retrofitting or new construction of treatment facilities. Our largest application is a 53 MGD industrial wastewater treatment facility.



IMET



Institute of Fluorescence



SciTech



EnviroTech

Photo of BDP Headquarters at Baltimore, Maryland, USA

Global Credentials and Validation

USA

- Introduced by U.S. EPA as Emerging Technologies for Wastewater Treatment and In-Plant Wet Weather Management;
- Special recognition by U.S. Congress;
- Special recognition by State of California Senate;
- Special Grant from State of California Energy Commission;
- Special Grant from California State Water Resources Control Board;
- Tested by IMET (Institute of Marine and Environmental Technology) on confirming high efficiency performance.

Europe

- Validated by IRSTEA (French National Research Institute of Science and Technology for Environment and Agriculture). Currently merged with INRA as INRAE (French National Research Institute for Agriculture, Food, and Environment);
- Participates as the exclusive technology provider in STEP du Futur (Wastewater Treatment for Future) Program, which is sponsored by French government and carries out by INRAE.

China


- Awarded by China Chemical Fiber Association as the Top 10 and only Energy Saving and Emission Reduction Technology Achievements in Chemical Fiber Industry;
- Nationwide promoted by Industry hosted by China National Textile and Apparel Council saving and for pollution reduction for Viscose Fiber.

An Important Breakthrough

MICROBIOLOGY: Under unique operating conditions (**DO 0.3 mg/L, MLSS 8,000 mg/L**), the BDP system maximizes the amount of domesticated microorganisms, which can effectively biodegrade the organic pollutants in wastewater, while reducing waste sludge.

CARPET AERATION: The unique diffuser system provides evenly distributed aeration with efficient micromixing. The improved **SOTE 52%** allows an enhanced ability for microorganisms to obtain needed oxygen. The distinctive tubular aerator installation enables automated self-cleaning and easy replacement, resulting in minimal maintenance and no operation downtime.

AIRLIFT CIRCULATION: Air is injected continuously near the bottom of a confined space of the all-in-one basin to induce a density-gradient driven circulating flow. The injected air reduces the density of the mixed liquor locally and creates a driving force due to the density difference. The driving force causes the mixed liquor to flow and creates a circulation pattern in the basin.

An aerial photograph of a large industrial wastewater treatment facility. The foreground and middle ground are dominated by several long, rectangular aeration basins covered with bright blue, corrugated plastic sheeting. Yellow metal walkways and railings are visible around the basins. In the background, there are large, white, dome-shaped structures, likely anaerobic digesters, and various pipes and industrial buildings. The sky is overcast.


BDP System at a Petrochemical Facility.
Client: British Petroleum Joint Venture WWTP
Capacity: 3,600 m³/d (1 MGD)
Operating Since: 2014

Expecting Excellence

HIGH DILUTING RECIRCULATION: Through the mixing of the circulating mixed liquor and the influent at a very high dilution ratio (20 – 350:1), the concentration of pollutants entering the aeration section is significantly reduced. It provides a stable environment for the growth of microorganisms and increases the impact resistance of the system.

FAST CLARIFICATION: The unique design of high-rate clarification system serves two main purposes: 1) fast separation of sludge/solids and water to ensure low TSS in the effluent; 2) continuously circulating the Mixed Liquor Suspended Solids (MLSS) at the bottom of the clarification area to maintain the steady quantity of microorganism in the aeration tank.

ALL-IN-ONE INTEGRATED BASIN STRUCTURE: BDP technology integrates several unit processes into one treatment basin, which greatly simplifies the process flow, with benefits of 1) plant footprint reduction, 2) lower capital and operating costs and 3) ease of operations, maintenance, and control.



BDP Effluent at a Municipal Wastewater Treatment Plant.

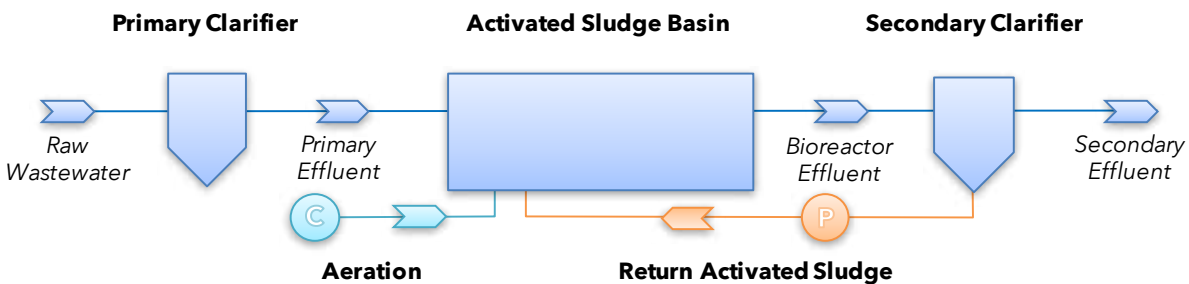
Client: Marubeni Joint Venture WWTP

Capacity: 50,000 m³/d (13.2 MGD)

Operating Since: 2007

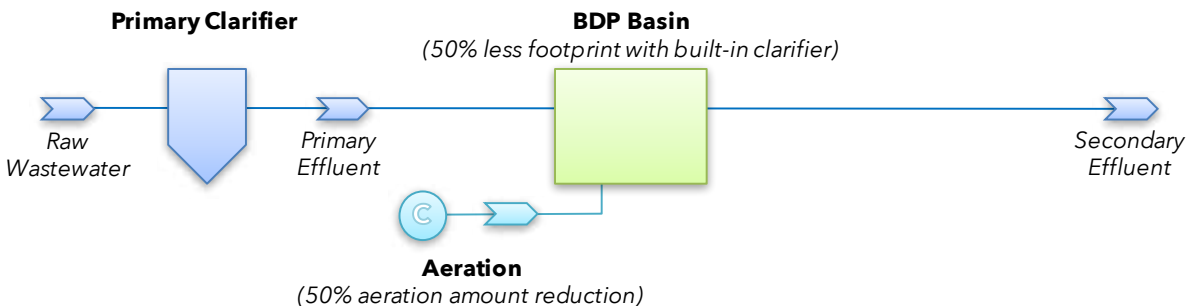
BDP Technology Advantages

CHALLENGE: The most common biological wastewater treatment process for nutrient removal is the activated sludge process. Conventional activated sludge processes, including separated anoxic and aerobic tanks with secondary clarifiers, require high CAPEX and OPEX. The current challenge for wastewater treatment plant operators is to meet the demand from the growing population, to comply with increasingly stringent regulations, and to upgrade aging infrastructure while potentially reducing energy consumptions and increasing water recycling.



Flow Chart of Conventional Wastewater Treatment Process

SOLUTION: The Biological Double-Efficiency Process (BDP) is an important breakthrough for biological wastewater treatment, based on Simultaneous Nitrification / Denitrification (SND) principles. The BDP system combines state-of-the-art, easy to maintain Airlift Circulation and Carpet Aeration system with an integrated, all-in-one bioreactor technology, resulting in substantial reduction of capital and O&M costs, energy consumption and footprint required and water savings benefits.



Flow Chart of Biological Double-Efficiency Process

Water Quality Improvement



De Anza Santa Cruz, CA

IRSTEA REPORT

BDP Carpet Aeration System has a much higher oxygen transfer efficiency (OTE) per unit water depth (2.22%/ft per water depth) as compared to the comparable aeration system, providing a more than double efficiency and more cost effective solution for the users.

IMET REPORT

Based on the difference between the water depth and the pressure on the air lines connected to the aerators, the resistance on the air delivery devices were calculated about 29% greater resistance for air stone than the BDP air manifold assembly.

According to IRSTEAs and IMET results, the BDP Aeration System delivers significant efficiency improvement.

The image shows a large-scale industrial aeration system. A central vertical pipe, painted blue, runs through the center. It is surrounded by a complex network of metal pipes and structural supports. Numerous horizontal diffusers are attached to the central pipe, each with its own set of valves and connections. The system is housed within a concrete structure, with the diffusers extending into a large tank. The lighting is bright, highlighting the metallic surfaces and the blue paint.

BDP Aeration System at an Industrial
Wastewater Treatment Facility.
Client: Shaoxing Textile Industrial Park
Capacity: 200,000 m³/d (53 MGD)
Operating Since: 2012

Expecting Excellence

ADVANTAGE: Compared to the conventional biological wastewater treatment process, BDP Technology provides a significant reduction in **Capital Expenditure (CAPEX)** and **Operating Expense (OPEX)** with outstanding contaminant **Removal Rates**.

Save Your Costs
50% Lower Energy Consumption
50% Less Footprint (or Double Capacity)
50% Waste (Surplus) Sludge Handling
50% O&M Cost Savings

Excellent Contaminant Removal Rate*
Up-to 96% COD Removal Rate
Up-to 99% BOD Removal Rate
Up-to 95% Total-N Removal Rate
Up-to 99% Ammonia-N Removal Rate

*Note: Data represents the performance of the BDP biological treatment process only.



BDP Retrofitting Project Site.
Client: Sinopec Petrochemical
Capacity: 2,500 m³/d (0.66 MGD)
Operating Since: 2007

Our Clients

BDP EnviroTech offers industry-focused, partnership approaches environmental solutions coupled with cutting-edge technology and data-driven analytics, we have built a track record of success.



Do Business with Us

BDP EnviroTech always seeks dynamic partners to deliver excellent solutions to our clients. We are a trusted business partner for Private Entities, Distributorships, Public Agencies and Research Institutions.



Private Entities

BDP EnviroTech partners with private entities, environmental engineering, consulting and service companies all over the world to help their clients to improve wastewater treatment performance and reduce overall cost.



Distributorships

BDP EnviroTech, the wastewater technology company, has for the last ten years been developing its operating model and dealer support network. We are currently searching for additional marketing and dealership partners.



Public Agencies

BDP EnviroTech works in close collaboration with the federal government and local agencies such as USEPA, State Water Boards and Local Water Districts, to help the public's awareness and apply our technology to the water industry.



Research Institutions

BDP EnviroTech collaborates with Research Institutions toward the definitive objective of improving water environment by understanding the mechanism of our technology and educating the next generation water experts.

Applications

MUNICIPALITY



Municipal Wastewater
Reclamation



Landfill Leachate
Treatment



Waterbody Pollution
Control and Management

PRIVATE



Petrochemical
Pharmaceutical
Fine Chemical



Paper & Pulp
Textile & Printing



Food & Beverage
Hotel & Resort



California Energy Commission (CEC) Grant
Award-Winning Project Site at City of Rialto,
California, USA
(Copyright: Google Map Data)



Water is life. Every drop is so precious!

At Aquastar our mission is to reduce, recycle and reuse water through proper treatment and management. Water is precious. We want to ensure that this resource is sustainable and preserve for future generations.

Aquastar Consulting & Engineering Inc. is a federal corporation entity registered with Corporation Canada. Aquastar Consulting and Engineering (India) Pvt. Ltd. is formally incorporated in India.

Our professionals have a combined experience of more than 30 years, so you can be confident that we can improve the sustainability and efficiency of your systems.

Mission



Reduce, recycle, and reuse water through proper treatment and management.

Vision



Save this precious resource for our planet, and for future generations, and a sustainable environment.

Aquastar Global Services

Desalination & Brine Management Industrial

Water Treatment

Municipal Water & Wastewater Treatment

Produced Water Treatment

Water Recycle and Reuse

Zero Liquid Discharge (ZLD)

Solid Waste and Sludge Management

Specialty Chemicals and Programs



Aquastar uses a multi-disciplinary, integrated approach to provide its clients with solutions that are both cost-effective and fit for purpose. Aquastar is a growing consulting and engineering company in Canada and India. Keys to our success have been a commitment to customer satisfaction, with a high quality of work, strong technical capability, and exceptional project delivery.

Our services related to Desalination, Water and Wastewater Treatment include:

- Study, design, consulting and engineering services
- Water/wastewater sample analysis and review
- Conduct feasibility study, optimization study, conceptual study
- Prepare treatment system design and carry out engineering review for industrial, municipal, and commercial clients
- Provide professional consulting services (in capacity of independent consultant/contractor and Owner's Engineer)
- Provide multi-disciplinary design, consulting, and engineering services (process, mechanical, piping, electrical, instrumentation and control, automation, civil, and structural)
- Provide technical review, peer review and quality assurance review on project deliverables
- Industrial sectors: automobile, chemicals and fertilizers, food and beverage, oil and gas, metals, mining, pulp and paper, pharmaceuticals, semiconductor, textiles, utilities, power, etc.
- Technologies: Ion Exchange (Softening, De-mineralization, DE alkalization, Condensate Polishing), Remineralization, Electro deionization (EDI), Electrodialysis Reversal (EDR) Desalination, Membrane Based (MF/NF/UF/RO/UHPRO), Thermal (MED/MSF/MVC), Oil-water Separation (API/DAF/IGF/CPI/WSF)
- Municipal: raw water treatment, desalination of seawater and remineralization for potable application, effluent and sewage treatment, recycle and reuse
- Municipal sludge treatment
- Desalination and brine management
- Industrial Water treatment
- Produced Water Treatment
- Zero Liquid Discharge (ZLD)





Contact Us

Aquastar Consulting & Engineering Inc. is an authorized representative of BDP EnviroTech. Want to get in touch with us? Give us a short description of your wastewater problem you're having. We'll get you connected to the help you need.

Aquastar Consulting & Engineering Inc.

Suite 1000 - 888 3rd St. SW, Bankers Hall, West Tower,
Calgary, AB T2P 5C5 Canada
Cell: +1 587-718-1057, Cell: +1 832-853-3114
Office: +1 403-475-4045, Fax: +1 403-475-AQUA (2782)
Email: info@aquastarengg.com
Jayesh.Mistry@aquastarengg.com

Aquastar Consulting & Engineering (I) Pvt. Ltd.

Earth Arise, 11th Floor, Sarkhej Gandhinagar Highway,
Makarba, Ahmedabad 380015, Gujarat, India
Cell: +91 87806 24424, Cell: +91 82380 64624
Email: info@aquastarengg.com
Kishor.Panchal@aquastarengg.com

Aquastar Consulting & Engineering (I) Pvt. Ltd.

Platina, G Block, 11th Floor, Bandra Kurla Complex
Bandra (East), Mumbai 400051, Maharashtra, India
Cell: +91 91751 16496
Email: info@aquastarengg.com
Monika.Krishan@aquastarengg.com